

DEPARTMENT OF TRANSPORTATION**DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-012477**Date Inspected:** 09-Mar-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 1300**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 2130**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** See Below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Orthotropic Box Girders**Summary of Items Observed:**

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the E1/E2 and E2/E3 field splices:

- A). Field Splice E1 to E2.
- B). Field Splice E2 to E3.

The QAI observed the Flux Cored Arc Welding (FCAW-G) process of the longitudinal plate stiffener identified as Weld Number (WN): 1E-2E-D-S6. The vertical up (3G) welding, with the work placed in the vertical plane and the groove approximately vertical, was performed by the welding personnel Songtao Huang ID-3794 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-3010-1 Rev. 0. The WPS was also used by the AB/F Quality Control (QC) Inspector Bernie Docena to perform QC verification of the Direct Current Electrode Positive (DCEP) welding parameters during the Complete Joint Penetration (CJP) groove welding of the longitudinal stiffener field splice. The QAI also observed the QC inspector verifying the welding parameters and were noted as follows: 256 amps, 23.5 volts and a travel speed measured at 235 mm per minute with the calculated Heat Input (HI) noted as 1.4 kJ/mm. The QC inspector also monitored the minimum preheat temperature of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius during the field welding. The QAI also observed the CJP groove welding of the side plate splice identified as WN: 1E-2E-C, Weld Segments C1 and C2. The welding was performed by the welding operators Rory Hogan ID-3186 and Jeremy Dolman ID-5042 utilizing the FCAW-G process as per the WPS identified as ABF-WPS-D15-3042A-1 Rev. 0. The QC inspector James Cunningham also used the WPS to perform QC verification of the DCEP welding parameters which were

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observed and noted as follows: 248 amps, 24.0 volts with a travel speed measured at 254 mm per minute and the HI calculated at 1.5 kJ/mm. The surface temperatures were also verified by the QC inspector and were noted as follows: the minimum preheat temperature of 60 degrees Celsius, the maximum interpass temperature of 230 degrees Celsius.

Later in the shift, at approximately 1445 hours, the QAI observed the Ultrasonic Testing (UT) performed by the technicians Steve McConnell and Tom Pasqualone on the transverse deck plate field splice identified as WN: 1E-2E-A, Weld Segment A3. The QAI observed the UT technicians perform the required longitudinal and shear wave scanning technique during the testing which was performed utilizing a USM 35 and a US52L, manufactured by Krautkramer, a 1" diameter used to perform base metal soundness and a .75 x .75 rectangular transducers used to perform the angle beam technique for weld soundness. At the conclusion of the testing there were two (2) rejectable discontinuities noted by the QC technician Steve McConnell. The technicians utilized the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4. The transverse scanning technique utilizing the scanning pattern "D" testing was not performed during this shift and will commence on the next scheduled shift.

The QAI also observed the welding of the 12mm x 38mm backing bar at the weld joint identified as 2E-3E-D. The welding was performed by James Zhen ID-6001 and Jin Quan Huang ID- 9340 utilizing the FCAW-G process as per the WPS identified as ABF-WPS-D15-F3200-2. The QC inspector Mike Johnson verified the DCEP the average welding parameters and were noted as follows: 235 amps, 22.6 volts and the travel speed measured at 376 mm/minute. The welding was performed on the east Orthotropic Box Girder (OBG) attaching the backing bar to the OBG identified as E3.

Observation and Verification Summary

The QA inspector observed the FCAW-G of the E1/E2 field splice utilizing the WPS's as noted above which appeared to be posted at the weld station. The welding parameters and preheat temperatures were verified and noted utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The consumables utilized during the groove welding appeared to be an ESAB manufactured product identified as ESAB Dual Shield 70 Ultra Plus with a size of 1.4mm which appeared to comply with the AWS Electrode Specification AWS A5.20 and the AWS Classification E71T-1M. The welding, QC inspection and UT performed on this shift was not completed except as noted above and appeared to be in general compliance with the contract documents. The QAI randomly verified the QC inspection, the welding parameters and surface temperatures utilizing various inspection equipment and gages, a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

See digital photographs located on Page 3 of this report in regards to the work observed during this shift.

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Summary of Conversations:

There were no pertinent conversations discussed in regards to the project except as noted above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

Inspected By: Reyes,Danny

Quality Assurance Inspector

Reviewed By: Levell,Bill

QA Reviewer